FEMA 209: 390185

FLOOD INSURANCE STUDY

GALLIA COUNTY, OHIO
UNINCORPORATED AREAS

SEPTEMBER 29, 1989

Federal Emergency Management Agency

COMMUNITY NUMBER - 390185

NOTICE TO
FLOOD INSURANCE STUDY USERS

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study may not contain all data available within the repository. It is advisable to contact the community repository for any additional data.

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FLOOD INSURANCE STUDY

GALLIA COUNTY, UNINCORPORATED AREAS, OHIO

1.0 INTRODUCTION

1.1 Purpose of Study

This Flood Insurance Study investigates the existence and severity of flood hazards in the Unincorporated Areas of Gallia County, Ohio, and aids in the administration of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. This study has developed flood risk data for various areas of the community that will be used to establish actuarial flood insurance rates and assist the community in its efforts to promote sound floodplain management. Minimum floodplain management requirements for participation in the National Flood Insurance Program are set forth in the Code of Federal Regulations at 44 CFR, 60.3.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive or comprehensive than the minimum Federal requirements. In such cases, the more restrictive criteria take precedence and the state (or other jurisdictional agency) will be able to explain them.

1.2 Authority and Acknowledgments

The sources of authority for this Flood Insurance Study are the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973.

The hydrologic and hydraulic analyses for this study were performed by Dodson-Lindblom Associates, Inc., (the Study Contractor) for the Federal Emergency Management Agency (FEMA), under Contract No. EMW-86-C-2232. This study was completed in May 1987.

1.3 Coordination

On January 30, 1986, an initial coordination meeting was held with representatives of FEMA, Gallia County, and the Study Contractor.

On November 21, 1988, the results of this Flood Insurance Study were reviewed and accepted at a final coordination meeting attended by representatives of the Study Contractor, FEMA, and the community.

2.0 AREA STUDIED

2.1 Scope of Study

This Flood Insurance Study covers the unincorporated areas of Gallia County, Ohio. The area of study is shown on the Vicinity Map (Figure 1). The incorporated areas within the county were excluded from this study.

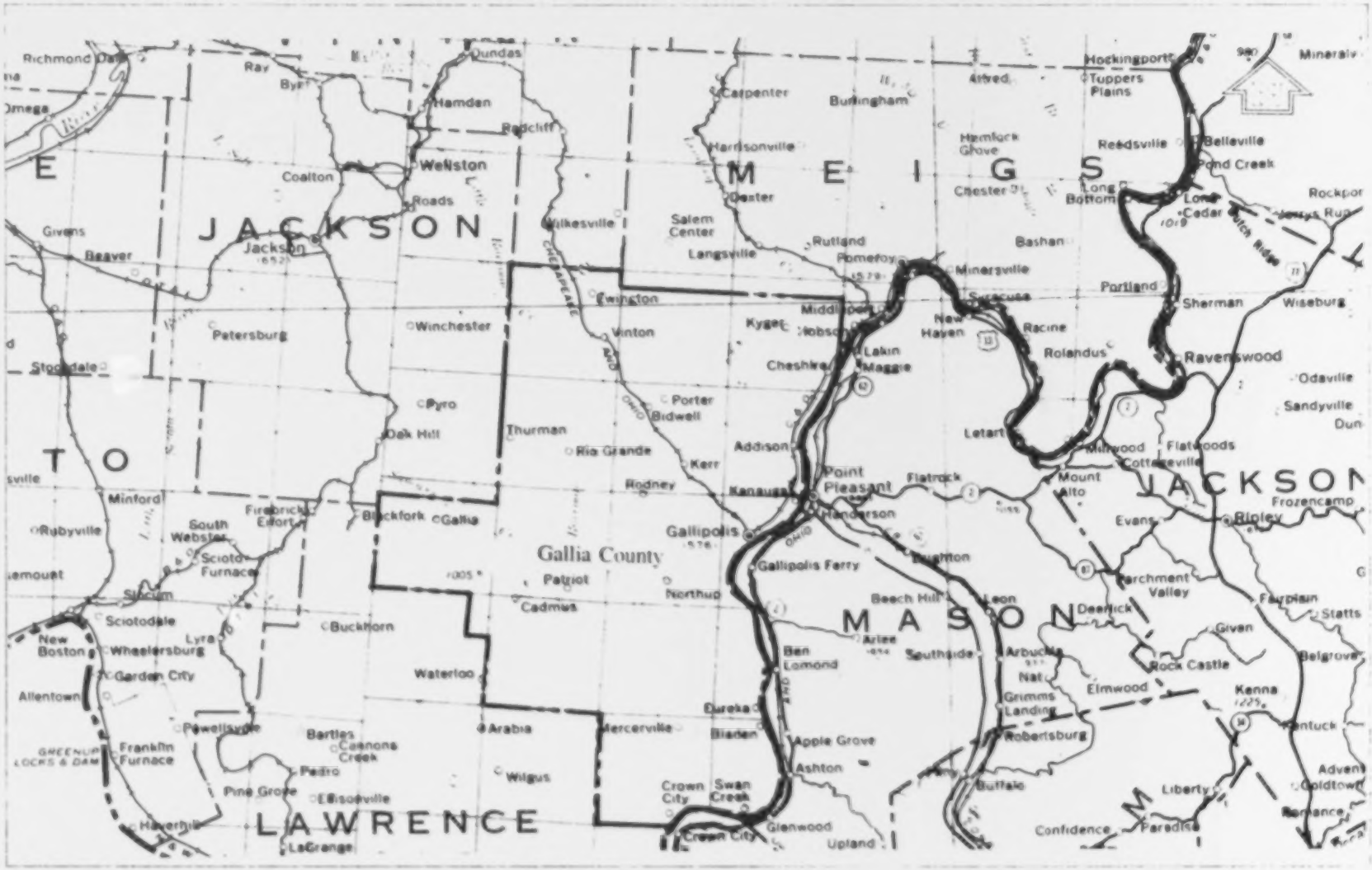

FIGURE 1

FEDERAL EMERGENCY MANAGEMENT AGENCY

GALLIA COUNTY, OHIO
(UNINCORPORATED AREAS)

APPROXIMATE SCALE

8 0 8 16 24 MILES

VICINITY MAP

Flooding caused by overflow of the Ohio River, Clear Fork, Chickamauga Creek, Little Chickamauga Creek, and the tributaries of Chickamauga and Little Chickamauga Creeks was studied in detail.

Areas having low development potential or minimal flood hazards were previously studied using approximate analyses. The results were shown on the Flood Hazard Boundary Map for Gallia County, Ohio (Reference 1) and are incorporated into this Flood Insurance Study.

The areas studied were selected with priority given to all known flood hazard areas and areas of projected development or proposed construction through May 1992. The scope and methods of study were proposed to and agreed upon by FEMA and Gallia County.

2.2 Community Description

Gallia County is in southern Ohio and is bordered by Vinton and Meigs Counties, Ohio, on the north; Jackson and Lawrence Counties, Ohio, on the west; and Mason County, West Virginia, on the south and east. Gallia County is served by U.S. Route 35; State Routes 7, 141, 160, 218, 325, and 554; and the CSX railroad. The 1980 population of Gallia County was reported to be 30,098 (Reference 2).

Gallia County has a temperate climate characterized by moderate differences in temperature and precipitation. The mean temperature ranges from 32.3 degrees Fahrenheit (^{o}F) in January to 75.1 ^{o}F in July. The average annual precipitation is 41.2 inches (Reference 3).

The Ohio River, as it flows to the Gallia County floodplains, drains an area of about 54,000 square miles, collecting runoff from as far away as the headwaters of the Allegheny River in southwestern New York State. The Allegheny River joins the Monongahela River at the City of Pittsburgh, Pennsylvania, to form the Ohio River, 269 river miles upstream of the City of Gallipolis, Ohio.

The U.S. Army Corps of Engineers (COE) is responsible for flood control projects and navigation facilities for the Ohio River. The drainage area is 19,100 square miles at Pittsburgh and 203,940 square miles at its mouth. The main stem of the Ohio River falls 429 feet in its 981-mile course from the City of Pittsburgh to its confluence with the Mississippi River near the City of Cairo, Illinois. The valley is rather narrow for the size of the drainage area, reflecting the glacial changes. It ranges in average width from less than 0.5 mile in the reach between Pittsburgh and the City of Wheeling, West Virginia, to more than 1 mile between the City of Cincinnati, Ohio, and the City of Louisville, Kentucky. At Louisville, it widens to about 4 miles and then contracts to 1 mile below the Salt River. Near the mouth, it again widens to 6 to 8 miles. Elevations vary from 100 to 600 feet below the plateaus surrounding the valley. The only falls are at Louisville, where a 25-foot difference in water-surface elevations existed between the upper and lower pools prior to canalization.

Between Gallipolis and the City of Point Pleasant, West Virginia, the Ohio River floodplain is heavily developed with residential, commercial, and transportation facilities. Commercial development is rapidly spreading to all of the flood-prone bottomlands.

2.3 Principal Flood Problems

Major Ohio River floods are caused by excessive rainfall over the basin during the widespread storms that occur in the winter and spring. Floods rise to their crests very slowly and remain above bankfull stage for extended periods. For example, the 1937 flood took 17 days to rise to its crest and remained out of banks for about 2 weeks. The much smaller flood of March 1967 rose to its crest in 5 days and remained out of banks for over a week. The maximum rate of rise during a major flood is normally less than 0.5 foot per hour (Reference 4).

Newspaper accounts and other historical records show that large Ohio River floods occurred in 1806, 1832, 1847, 1852, 1865, 1880, and 1884. Major floods have also occurred in 1913, 1936, 1937, 1945, 1950, 1955, and 1963. Lesser floods over the past 2 centuries are too numerous to list.

On July 12, 1976, Gallia County received approximately 4 inches of rain in 1 hour, causing severe and widespread flood damage in the Chickamauga Creek watershed. Less than 2 weeks later, on July 22, 1976, another storm produced 4.4 inches of rain in 2 hours (Reference 5).

2.4 Flood Protection Measures

No local protection project exists for Gallia County along the Ohio River. After the devastating 1937 flood, studies were performed by the COE to determine if projects consisting of levees, floodwalls, and pumping stations could be justified for the incorporated communities of Gallipolis and the Village of Cheshire, Ohio. Both projects, although approved at that time for construction, were never built.

In the Ohio River basin upstream of Gallia County, there are 37 reservoirs for flood control and other purposes. The combined flood control functions of those reservoirs reduce flood heights considerably within the study area. The information presented in this study concerning probable future flood levels reflects the reductions in flood heights attributed to the reservoirs.

The Gallipolis Lock and Dam, about 10 miles downstream of Gallipolis at river mile 279.2, has no measurable effect on flood heights. Neither that structure nor the others along the Ohio River increase or reduce flood heights. When flows in the river increase above normal, the large gates in the dam are opened gradually. If flows continue to increase, the gates will continue to open to maintain the normal pool level.

3.0 ENGINEERING METHODS

For the flooding sources studied in detail in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that is expected to be equaled or exceeded once on the average during any 10-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 50-, 100-, and 500-year floods, have a 10-, 2-, 1-, and 0.2-percent chance, respectively, of being equaled or exceeded during any year. Although the recurrence interval represents the long-term average period between floods of a specific magnitude, rare floods could occur at short intervals or even within the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedence) in any 50-year period is approximately 40 percent (4 in 10), and, for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

3.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak discharge-frequency relationships for each riverine flooding source studied in detail affecting the community.

Most of the following information is taken from the COE report titled "Ohio River Basin Comprehensive Survey, Appendix C, Hydrology" (Reference 6).

Frequency data for the Ohio River were supplied by the COE, Ohio River District. Natural maximum annual frequency curves were developed by the COE in accordance with the U.S. Water Resources Council report titled "Statistical Methods in Hydrology" (Reference 7).

The computed natural statistics (mean, standard deviation, coefficient of skew) for the entire period of record were adjusted by reconciling adjacent points and comparing drainage area proportions to produce consistent statistics throughout the length of the river. Stage-frequency curves were developed by converting flows to stage using crest stage-maximum discharge relationships plotted from historical data and extended rating curves prepared in connection with an Ohio River Standard Project Flood (SPF) study.

The SPF is a hypothetical flood representing the critical volume and peak discharge that may be expected from a combination of meteorologic and hydrologic conditions reasonably characteristic of the geographical region. It represents a standard against which the degree of flood protection selected, called the Project Design Flood (PDF), may be judged and compared with protection provided by similar projects in other localities.

For this Flood Insurance Study, the SPF may be considered similar to the 500-year flood.

To determine modified flood peaks for the Ohio River, 12 historical floods plus 3 hypothetical ones of greater magnitude were used in the analyses of flow modification. The flows for those 15, which are considered representative of the basin, were modified by the operation of COE reservoirs either completed or under construction.

Frequency curves for the reservoir-modified discharges were developed for 20 locations on the main stem of the Ohio River. The discharges in the table below are measured from the gage nearest to Gallia County.

The 100-year discharge for Clear Fork was determined from Ohio Department of Natural Resources (ODNR) regression equations presented in Bulletin No. 45 (Reference 8). These equations relate the drainage area and channel slope to the peak discharge.

The 100-year discharges for Chickamauga Creek, Little Chickamauga Creek, and their tributaries were determined using U.S. Soil Conservation Service (SCS) techniques (Reference 9).

Peak discharge-drainage area relationships for the 10-, 50-, 100-, and 500-year floods of each flooding source studied in detail in the community are shown in Table 1.

TABLE 1 - SUMMARY OF DISCHARGES

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (SQ MILES)	PEAK DISCHARGE (CFS) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
OHIO RIVER at Point Pleasant (river mile 265.3)	52,760	389,000	487,000	532,000	543,000
CLEAR FORK about 3,200 feet downstream of State Route 141	6.84	N/A	N/A	2,840	N/A
CHICKAMAUGA CREEK at mouth	30.9	N/A	N/A	6,920	N/A
LITTLE CHICKAMAUGA CREEK at mouth	5.9	N/A	N/A	2,610	N/A
TRIBUTARY A at mouth	0.9	N/A	N/A	990	N/A

TABLE 1 - SUMMARY OF DISCHARGES (Continued)

FLOODING SOURCE AND LOCATION	DRAINAGE AREA (SQ MILES)	PEAK DISCHARGE (CFS) 10-YEAR	50-YEAR	100-YEAR	500-YEAR
TRIBUTARY B at mouth	0.6	N/A	N/A	750	N/A
TRIBUTARY C at mouth	6.7	N/A	N/A	3,000	N/A
TRIBUTARY D at mouth	2.7	N/A	N/A	1,330	N/A
TRIBUTARY E at mouth	0.6	N/A	N/A	2,390	N/A
TRIBUTARY F at mouth	1.5	N/A	N/A	820	N/A
TRIBUTARY G at mouth	3.1	N/A	N/A	1,140	N/A
TRIBUTARY H at mouth	2.7	N/A	N/A	1,130	N/A

3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals.

Cross-section data for the backwater analyses of the other streams studied in detail were obtained from field surveys. All bridge and culverts were field surveyed to obtain elevation data and structural geometry.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles and on the Flood Insurance Rate Map.

The roughness coefficients (Mannings "n") for all the streams studied in detail were estimated from aerial photographs and field reconnaissance of the study area.

Most of the following information is taken from the Ohio River Basin Comprehensive Survey (Reference 6).

Stream regulation studies and stream analyses are required to determine the effect of the combination of reservoirs on tributary or main stem flow. The COE reservoirs have been studied, but impoundments operated by others were not considered, with the exception of the Tennessee Valley Authority.

The 10-, 50-, and 100-year flood elevations were based on COE water-surface profiles, which reflect the reduction of flow provided by reservoirs constructed upstream of Gallia County. The 500-year flood elevation for the Ohio River was estimated using flood-flow frequency data from various gaging stations on the Ohio River and from the 100-year and January 1937 flood profiles (Reference 10).

Previously established flood routing procedures for the branches and upstream reaches of tributaries were used for this study. For the Ohio River and the lower reaches of major tributaries, the method and routing coefficients for SPF studies are applicable to large floodflows. Therefore, profiles were determined by flood routing and backwater computations as pertinent for the reach and the frequency of the flood.

A method of determining the effect of impoundments on floodflows is by reservoir holdout. The difference between a natural hydrograph and one resulting from the reservoir modification is routed downstream. This is to determine the lowering of crest discharge from storage, using the standard methods explained in COE EM 1110-2-1408 (Reference 12). This is generally simpler than routing the modified hydrograph which must be combined with tributary inflow. The routing of floods and reservoir holdouts, programmed by the COE, Ohio River Division, was used for this study.

The backwater effects of the Ohio River were extended up the tributaries within the community. Approximate methods of analyses were used for any tributary stream reaches within the community that were at a higher elevation than that influenced by the backwater effects.

The 100-year flood elevations along Clear Fork were computed using the HEC-2 step-backwater computer program (Reference 12). The starting water-surface elevation for that stream was estimated using the slope-area method. Flood elevations along Chickamauga Creek, Little Chickamauga Creek, and their tributaries were determined using SCS procedures (Reference 13).

Flood profiles were drawn showing the computed water-surface elevations for floods of the selected recurrence intervals. In cases where the 50- and 100-year flood elevations are close together, due to limitations of the profile scale, only the 100-year profile has been shown.

The hydraulic analyses for this study are based on the effects of unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

All elevations are referenced to the National Geodetic Vertical Datum of 1929 (NGVD). Elevation reference marks used in this study are shown on the map and described in the exhibit labeled Elevation Reference Marks.

4.0 FLOODPLAIN MANAGEMENT APPLICATIONS

The National Flood Insurance Program encourages state and local governments to adopt sound floodplain management programs. Therefore, each Flood Insurance Study provides 100-year flood elevations and delineations of the 100- and 500-year floodplain boundaries and 100-year floodway to assist communities in developing floodplain management measures.

4.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1-percent annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent annual chance (500-year) flood is employed to indicate additional areas of flood risk in the community. For each stream studied in detail, the 100- and 500-year floodplain boundaries have been delineated using the flood elevations determined at each cross section. For the Ohio River, the boundaries were interpolated using topographic maps at a scale of 1:7200 with a contour interval of 5 feet (References 14 and 15). For the remaining streams studied in detail, the boundaries were interpolated using topographic maps at a scale of 1:24000 with a contour interval of 20 feet (Reference 16).

The 100-year and 500-year floodplain boundaries are shown on the Flood Insurance Rate Map. On this map, the 100-year floodplain boundary corresponds to the boundary of the areas of special flood hazards (Zones A, AE, AH, AO, A99, V, and VE) and the 500-year floodplain boundary corresponds to the boundary of areas of moderate flood hazards. In cases where the 100- and 500-year floodplain boundaries are close together, only the 100-year floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

For the streams studied by approximate methods, only the 100-year floodplain boundary was delineated using the Flood Hazard Boundary Map for Gallia County (Reference 1).

4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces the flood-carrying capacity, increases the flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the National Flood Insurance Program, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 100-year floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 100-year flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this

study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways for this study were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. The results of the floodway computations are tabulated for selected cross sections and are shown in Table 2, Floodway Data. The computed floodways are shown on the Flood Insurance Rate Map. In cases where the floodway and 100-year floodplain boundaries are either close together or collinear, only the floodway boundary is shown.

Along streams where floodways have not been computed, the community must ensure that the cumulative effect of development in the floodplain will not cause more than a 1.0-foot increase in the base flood elevations at any point within the community.

The area between the floodway and the 100-year floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the floodplain that could be completely obstructed without increasing the water-surface elevation of the 100-year flood by more than 1.0-foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 2.

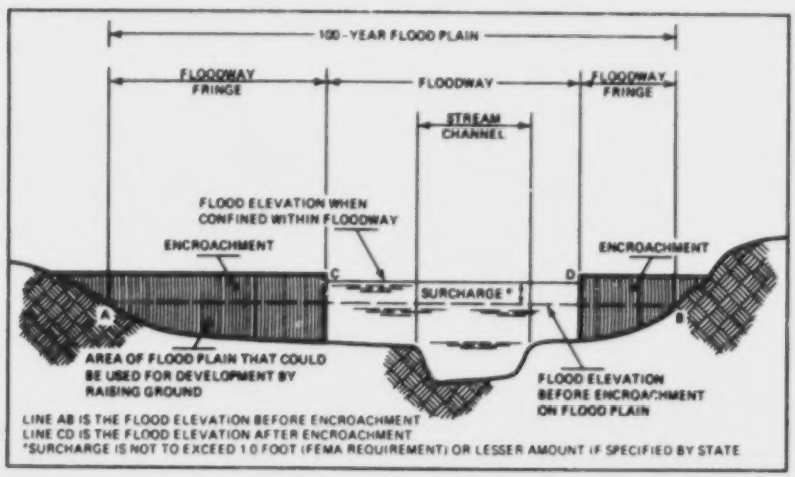
100-YEAR FLOOD PLAIN
FLOODWAY FRINGE
FLOODWAY
FLOODWAY FRINGE
STREAM CHANNEL
FLOOD ELEVATION WHEN CONFINED WITHIN FLOODWAY
ENCROACHMENT
ENCROACHMENT
C
D
SURCHARGE*
A
B
AREA OF FLOOD PLAIN THAT COULD BE USED FOR DEVELOPMENT BY RAISING GROUND
FLOOD ELEVATION BEFORE ENCROACHMENT ON FLOOD PLAIN
LINE AB IS THE FLOOD ELEVATION BEFORE ENCROACHMENT
LINE CD IS THE FLOOD ELEVATION AFTER ENCROACHMENT
*SURCHARGE IS NOT TO EXCEED 1.0 FOOT (FEMA REQUIREMENT) OR LESSER AMOUNT IF SPECIFIED BY STATE

FIGURE 2 - Floodway Schematic

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
CHICKAMAUGA CREEK								
A	24,475	132	1595	3.7	569.6	569.6	570.6	1.0
B	24,875	348	2961	2.0	569.9	569.9	570.9	1.0
C	27,575	246	1631	2.6	571.6	571.6	572.6	1.0
D	29,375	543	2723	1.5	572.7	572.7	573.7	1.0
E	33,325	78	639	6.2	581.1	581.1	582.1	1.0
F	35,600	350	2553	1.3	584.6	584.6	585.6	1.0
G	37,575	303	1756	2.0	585.9	585.9	586.9	1.0
H	39,375	227	1097	2.7	590.2	590.2	591.2	1.0
LITTLE CHICKAMAUGA CREEK								
A	4000	210	1603	1.8	569.0	566.7[2]	567.7	1.0
B	5500	286	1259	2.2	569.0	568.9[2]	569.9	1.0
C	7950	192	684	4.0	575.0	575.0	576.0	1.0
D	10,150	197	879	3.1	581.4	581.4	582.4	1.0
E	11,050	94	461	2.5	583.5	583.5	584.5	1.0
F	12,475	279	879	1.3	587.0	587.0	588.0	1.0
G	14,300	93	324	3.6	596.5	596.5	597.5	1.0
H	15,600	125	454	2.6	604.1	604.1	605.1	1.0

[1]FEET ABOVE MOUTH
[2]ELEVATIONS WITHOUT CONSIDERING BACKWATER EFFECT FROM OHIO RIVER

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

GALLIA COUNTY, OH
(UNINCORPORATED AREAS)

FLOODWAY DATA

CHICKAMAUGA CREEK - LITTLE CHICKAMAUGA CREEK

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
TRIBUTARY A								
A	790	71	257	3.9	587.8	587.8	588.8	1.0
B	3000	67	311	3.2	608.8	608.8	609.8	1.0
TRIBUTARY B								
A	700	81	258	2.9	584.7	584.7	585.7	1.0
B	2420	20	101	7.4	599.5	599.5	600.5	1.0
C	3520	17	79	9.6	619.7	619.7	620.7	1.0
TRIBUTARY C								
A	2400	527	2071	1.4	573.0	573.0	574.0	1.0
B	3650	275	945	1.9	574.7	574.7	575.7	1.0
C	5950	174	861	2.1	578.7	578.7	579.7	1.0
D	7450	121	601	3.0	583.9	583.9	584.9	1.0
E	9800	166	729	2.5	592.8	592.8	593.8	1.0
F	12,250	142	580	3.1	601.3	601.3	602.3	1.0

[1]FEET ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

GALLIA COUNTY, OH
(UNINCORPORATED AREAS)

FLOODWAY DATA

TRIBUTARY A - TRIBUTARY B - TRIBUTARY C

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
TRIBUTARY D								
A	475	224	1082	1.2	573.9	573.9	574.9	1.0
B	2200	76	372	3.6	579.1	579.1	580.1	1.0
C	3775	94	383	3.5	585.3	585.3	586.3	1.0
D	5675	74	351	3.8	592.1	592.1	593.1	1.0
E	8475	49	273	4.9	607.9	607.9	608.9	1.0
TRIBUTARY E								
A	550	100	541	4.4	607.2	607.2	608.2	1.0
B	1750	78	500	4.8	617.3	617.3	618.3	1.0
C	3350	84	597	4.0	635.5	635.5	636.5	1.0
TRIBUTARY F								
A	525	155	590	1.4	575.6	575.2[2]	576.2	1.0
B	1450	123	606	1.6	580.5	580.5	581.5	1.0
C	2650	86	325	3.0	583.6	583.6	584.6	1.0
D	3600	61	262	3.7	590.6	590.6	591.6	1.0
E	4700	66	245	4.0	596.0	596.0	597.0	1.0
F	7175	39	192	4.9	613.9	613.9	614.9	1.0
G	8175	49	229	4.1	620.6	620.6	621.6	1.0

[1]FEET ABOVE MOUTH
[2]ELEVATIONS WITHOUT CONSIDERING BACKWATER EFFECT FROM CHICKAMAUGA CREEK

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

GALLIA COUNTY, OH
(UNINCORPORATED AREAS)

FLOODWAY DATA

TRIBUTARY D - TRIBUTARY E - TRIBUTARY F

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
TRIBUTARY G								
A	1035	435	3764	0.3	586.8	586.8	587.8	1.0
B	2555	60	334	3.4	588.5	588.5	589.5	1.0
C	4695	120	675	2.2	595.8	595.8	596.8	1.0
D	7085	28	196	7.7	605.8	605.8	606.8	1.0
E	8695	66	351	4.3	613.5	613.5	614.5	1.0
F	9670	60	341	4.4	618.3	618.3	619.3	1.0
TRIBUTARY H								
A	1510	175	626	1.8	587.9	587.9	588.9	1.0
B	3110	69	371	3.0	590.9	590.9	591.9	1.0
C	4090	90	368	3.1	596.6	596.6	597.6	1.0
D	5935	63	304	2.6	602.8	602.8	603.8	1.0
E	8205	60	254	3.1	614.1	614.1	615.1	1.0
F	10,530	146	755	1.5	632.8	632.8	633.8	1.0
CLEAR FORK								
A	6270	150	654	4.3	567.6	567.6	568.5	0.9
B	7100	65	381	7.4	569.4	569.4	570.3	0.9
C	8180	65	377	7.5	573.4	573.4	574.2	0.8
D	9535	80	575	4.9	580.4	580.4	580.8	0.4
E	10,010	75	445	6.4	580.9	580.9	581.8	0.9

[1]FEET ABOVE MOUTH

TABLE 2

FEDERAL EMERGENCY MANAGEMENT AGENCY

GALLIA COUNTY, OH
(UNINCORPORATED AREAS)

FLOODWAY DATA

TRIBUTARY G - TRIBUTARY H - CLEAR FORK

5.0 INSURANCE APPLICATION

For flood insurance rating purposes, flood insurance zone designations are assigned to a community based on the results of the engineering analyses. These zones are as follows:

Zone A

Zone A is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by approximate methods. Because detailed hydraulic analyses are not performed for such areas, no base flood elevations or depths are shown within this zone.

Zone AE

Zone AE is the flood insurance rate zone that corresponds to the 100-year floodplains that are determined in the Flood Insurance Study by detailed methods. Whole-foot base flood elevations derived from the detailed hydraulic analyses are shown at selected intervals within this zone.

Zone X

Zone X is the flood insurance rate zone that corresponds to areas outside the 100-year floodplain, areas of 100-year flooding where average depths are less than 1 foot, areas of 100-year flooding where the contributing drainage area is less than 1 square mile, and areas protected from the 100-year flood by levees. No base flood elevations or depths are shown within this zone.

6.0 FLOOD INSURANCE RATE MAP

The Flood Insurance Rate Map is designed for flood insurance and floodplain management applications.

For flood insurance applications, the map designates flood insurance rate zones as described in Section 5.0 and, in the 100-year floodplains that were studied by detailed methods, shows selected whole-foot base flood elevations or average depths. Insurance agents use the zones and base flood elevations in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

For floodplain management applications, the map shows by tints, screens, and symbols the 100- and 500-year floodplains, the floodways, and the locations of selected cross sections used in the hydraulic analyses and floodway computations.

7.0 OTHER STUDIES

Flood Insurance Studies published for Jackson County, the City of Gallipolis, and the Villages of Cheshire and Crown City, Ohio (References 17-20) and a Flood Insurance Rate Map printed for the Village of Rio Grande, Ohio (Reference 21) are in agreement with this study.

Flood Insurance Studies published for the City of Point Pleasant, the Town of Henderson, and Mason County, West Virginia (References 22-24) are not in agreement with this study because the flood profiles used in this study were prepared subsequent to the publication of the West Virginia studies.

A Flood Insurance Study in progress for Lawrence County, Ohio (Reference 25) is in agreement with this study.

Profiles for the Ohio River published by the COE, Ohio River Division (Reference 10) are in agreement with those shown in this study.

This Flood Insurance Study supersedes the previously printed Flood Hazard Boundary Map for Gallia County (Reference 1).

8.0 LOCATION OF DATA

Information concerning the pertinent data used in the preparation of this study can be obtained by contacting the Natural and Technological Hazards Division, FEMA, 175 West Jackson Boulevard, 4th Floor, Chicago, Illinois 60604-2698.

9.0 REFERENCES AND BIBLIOGRAPHY

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3. ————, National Oceanic and Atmospheric Administration, Climatological Data Annual Summary, 1985.

4. Ohio Department of Natural Resources, Flood Plain Information, Ohio River, Gallia County, Unincorporated Areas, Ohio, December 1974.

5. U.S. Department of Agriculture, Soil Conservation Service, Flood Hazard Study-Chickamauga Creek, Little Chickamauga Creek, and Tributaries-Gallia County, Ohio, Columbus, Ohio, May 1979.

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14. U.S. Army Corps of Engineers, Greenup Locks and Dam Pool-Ohio River-Topographic and Property Survey-Ohio, Kentucky, and West Virginia, Scale 1:7200, Contour Interval 5 Feet: March 1959.

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17. Federal Emergency Management Agency, Flood Insurance Study, Jackson County, Unincorporated Areas, Ohio, August 1985.

18. ————, Flood Insurance Study, City of Gallipolis, Gallia County, Ohio, July 1983.

19. ————, Flood Insurance Study, Village of Cheshire, Gallia County, Ohio, August 1983.

20. ————, Flood Insurance Study, Village of Crown City, Gallia County, Ohio, July 1983.

21. ————, Flood Insurance Rate Map, Village of Rio Grande, Gallia County, Ohio, September 1985.

22. U.S. Department of Housing and Urban Development, Federal Insurance Administration, Flood Insurance Study, City of Point Pleasant, Mason County, West Virginia, May 1978.

23. ————, Federal Insurance Administration, Flood Insurance Study, Town of Henderson, Mason County, West Virginia, May 1978.

24. Federal Emergency Management Agency, Federal Insurance Administration, Flood Insurance Study, Mason County, Unincorporated Areas, West Virginia, October 1980.

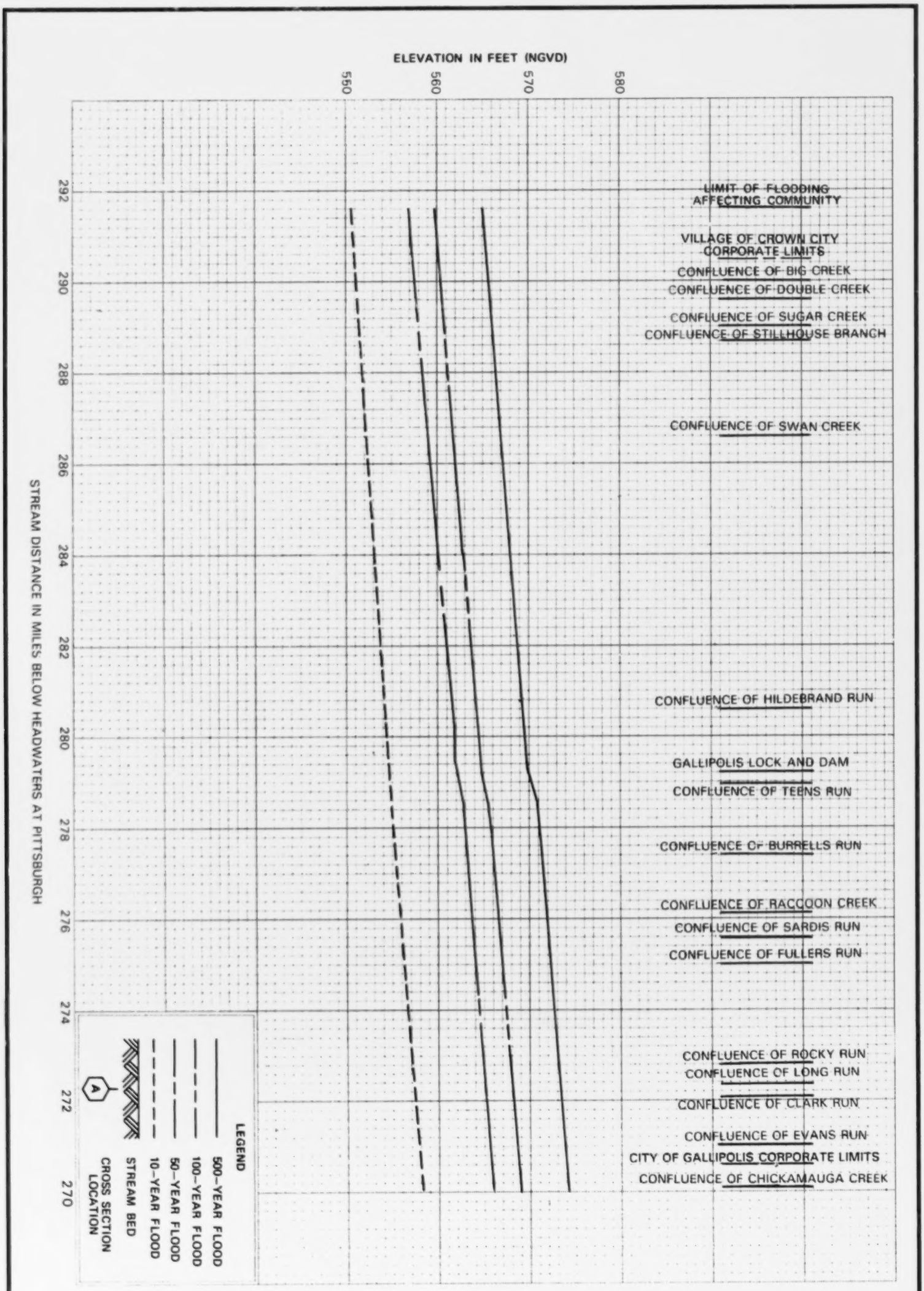
25. ————, Flood Insurance Study, Lawrence County, Unincorporated Areas, Ohio, in progress.

ELEVATION REFERENCE MARKS

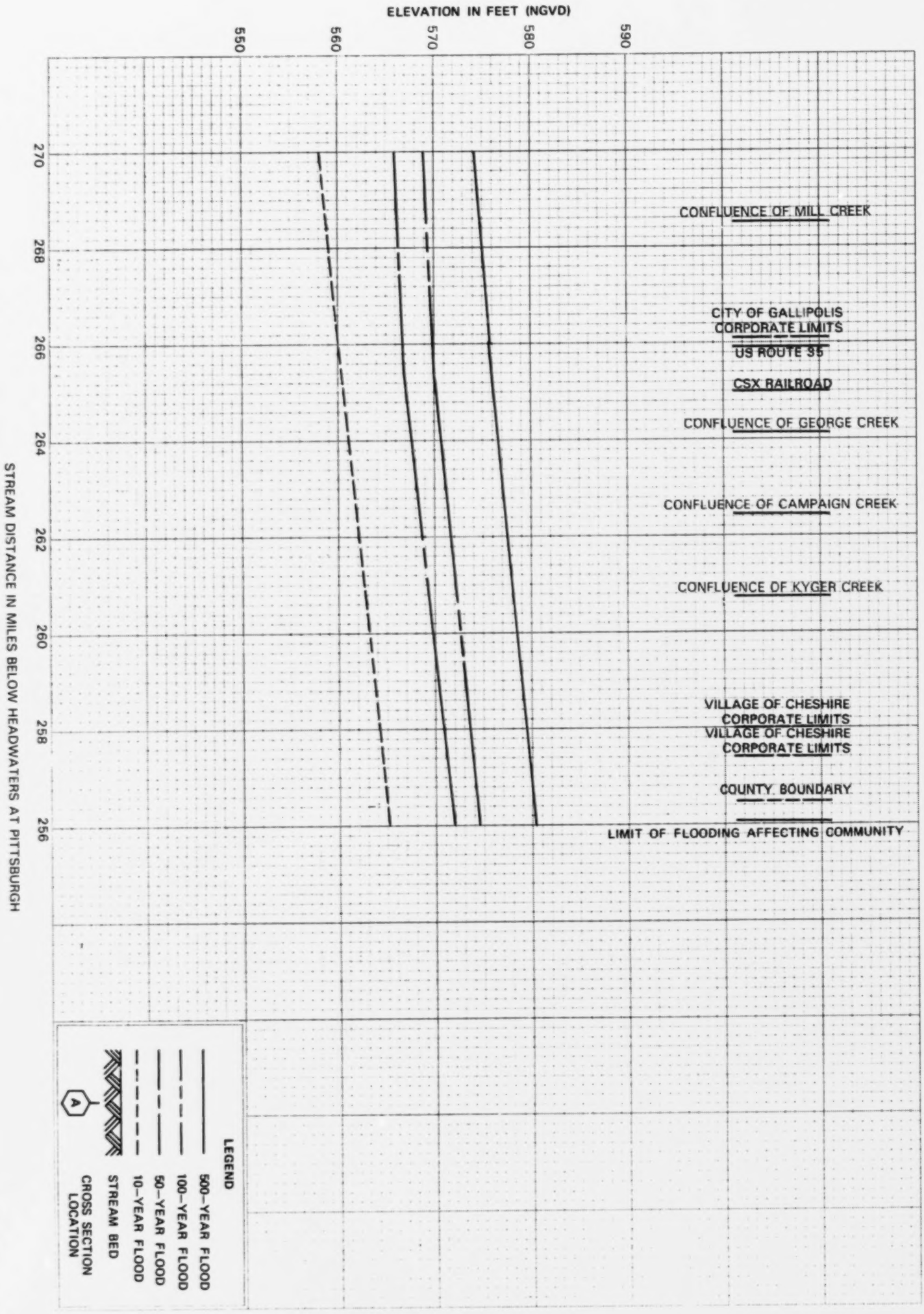
REFERENCE MARK	FLOOD INSURANCE RATE MAP PANEL	ELEVATION (FEET NGVD)	DESCRIPTION OF LOCATION
1	0085	628.79	mine dolly spike set 0.6 foot above ground in south side of power pole located about 100 feet north of Green Duly Road about 20 feet east of Tributary H
2	0095	634.71	mine dolly spike in north side of telephone pole number 93-4-3 located on east side of Mitchell Road, about 150 feet north of State Route 588
3	0105	594.95	chiseled cross on northeast abutment of Kerr Bethel Road bridge over Tributary G
4	0105	645.95	mine dolly spike set 1.0 foot above ground in north side of power pole located along east side of White Road about 150 feet south of exit to Charolais Estates
5	0105	313.24	top of steel railing directly above northwest corner guardrail support post of Kerr Bethel Road bridge over Tributary F
6	0115	567.40	top of 0.625-inch pin in top of southeast footer wall of CSX railroad bridge number 112-4 over Chickamauga Creek
7	0115	582.57	brass plate set in top of south headwall at east end culvert under U.S. Route 35, about 0.65 mile west of intersection of State Route 160 and U.S. Route 35
8	0115	582.78	mine dolly spike in the northeast corner of CSX railroad bridge number 109-7 located about 1,250 feet west of Buck Ridge Road

ELEVATION REFERENCE MARKS

REFERENCE MARK	FLOOD INSURANCE RATE MAP PANEL	ELEVATION (FEET NGVD)	DESCRIPTION OF LOCATION
9	0115	607.26	mine dolly spike set 10 inches above ground in west side of utility pole number L2697-1 located on north side of Kerr Bethel Road in front of trailer park
10	0160	576.86	chiseled square in concrete headwall at southwest corner of Centenary Cemetery Road bridge over Clear Fork



01P	FEDERAL EMERGENCY MANAGEMENT AGENCY **GALLIA COUNTY, OH** (UNINCORPORATED AREAS)	**FLOOD PROFILES** **OHIO RIVER**



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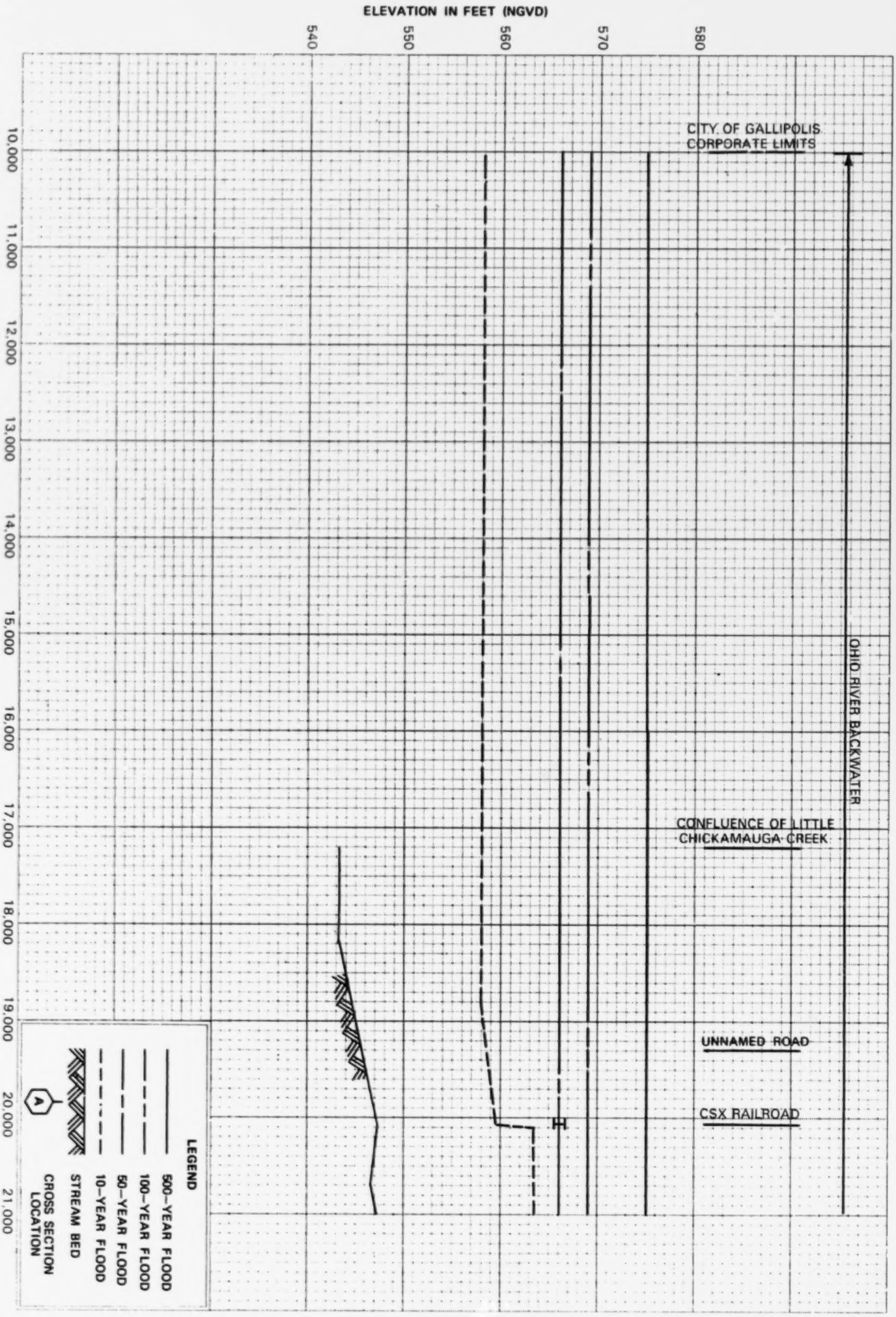

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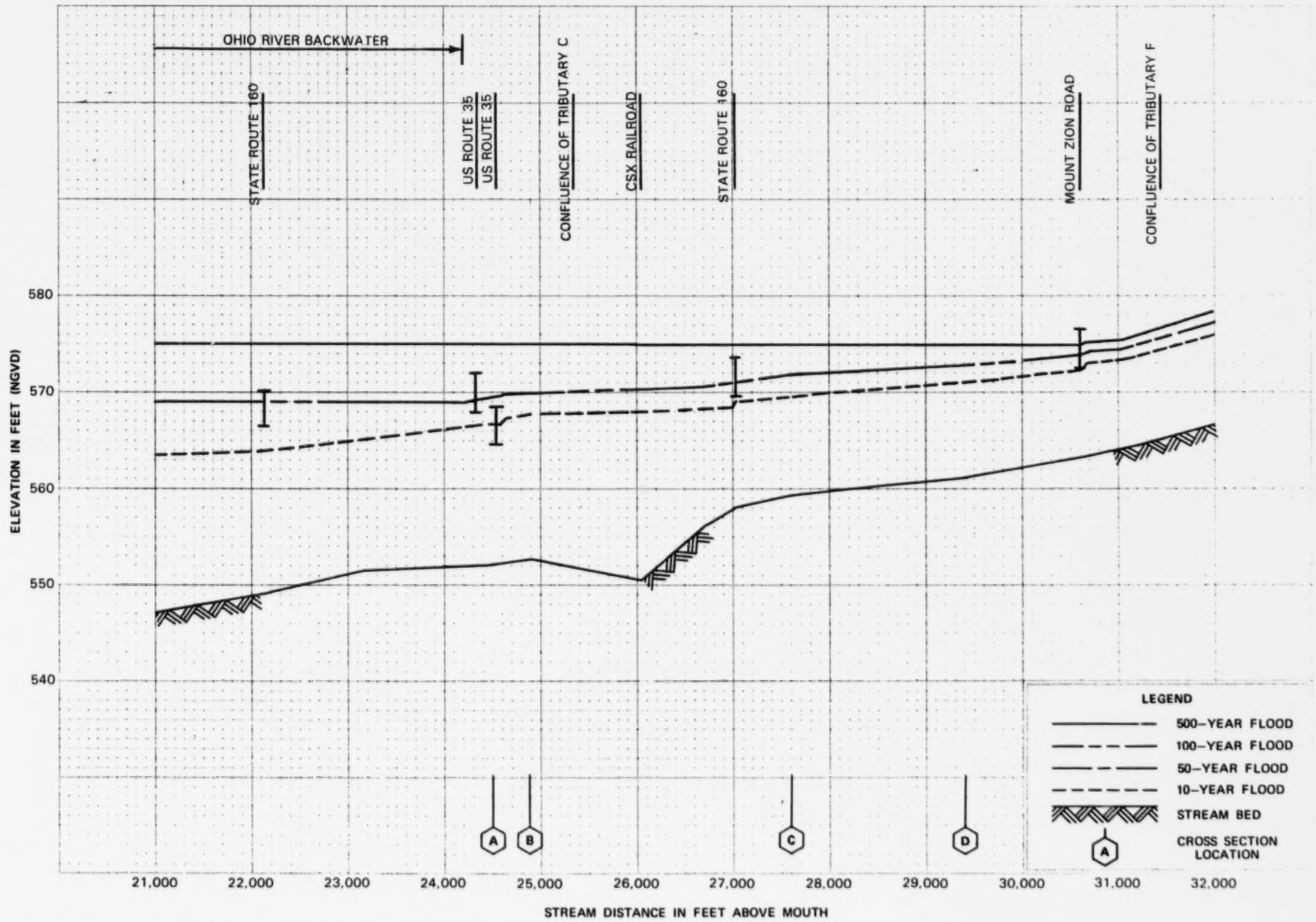


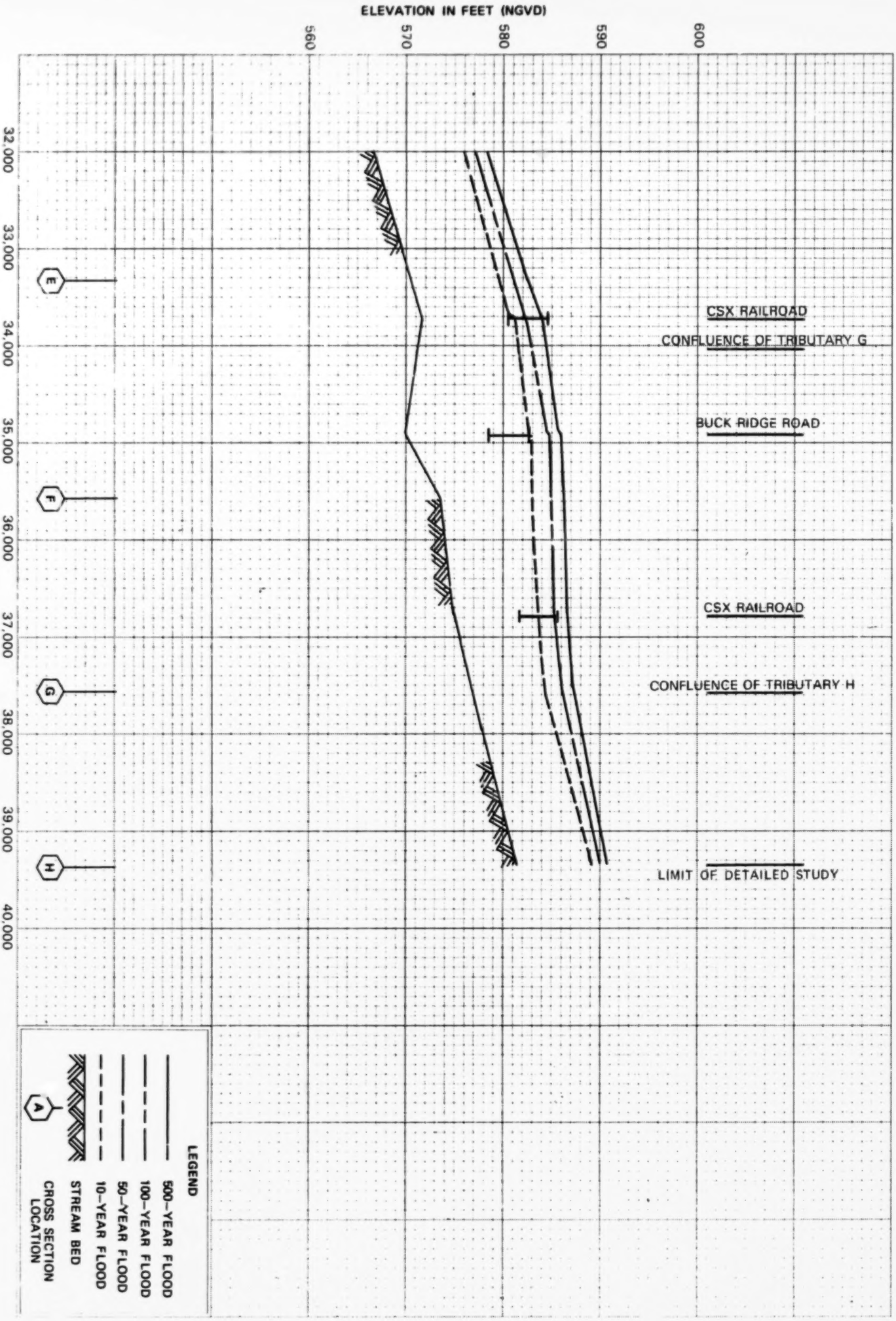
FLOOD PROFILES

CHICKAMAUGA CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

GALLIA COUNTY, OH
(UNINCORPORATED AREAS)

04P



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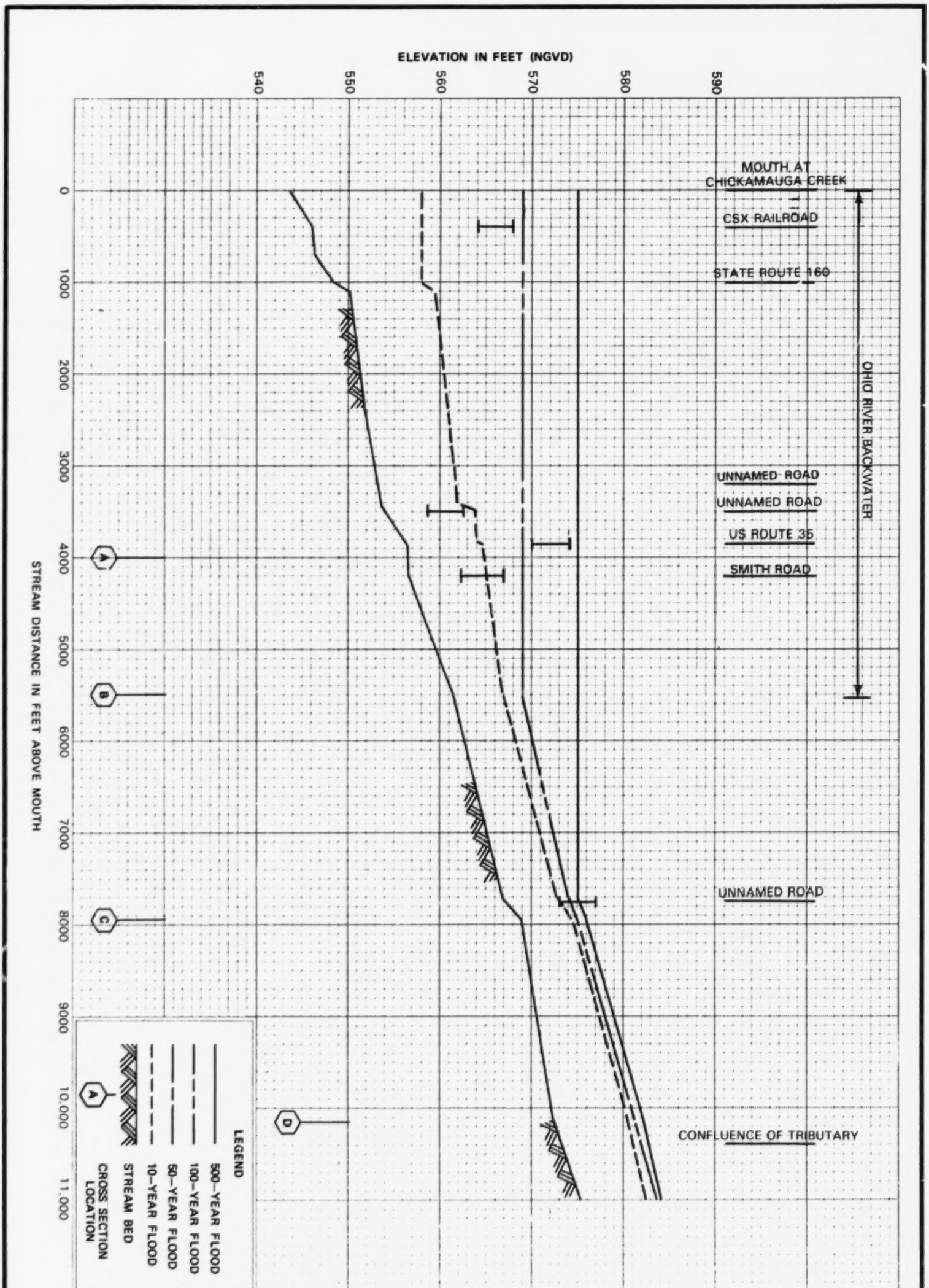
05P

FEDERAL EMERGENCY MANAGEMENT AGENCY

GALLIA COUNTY, OH
(UNINCORPORATED AREAS)

FLOOD PROFILES

CHICKAMAUGA CREEK



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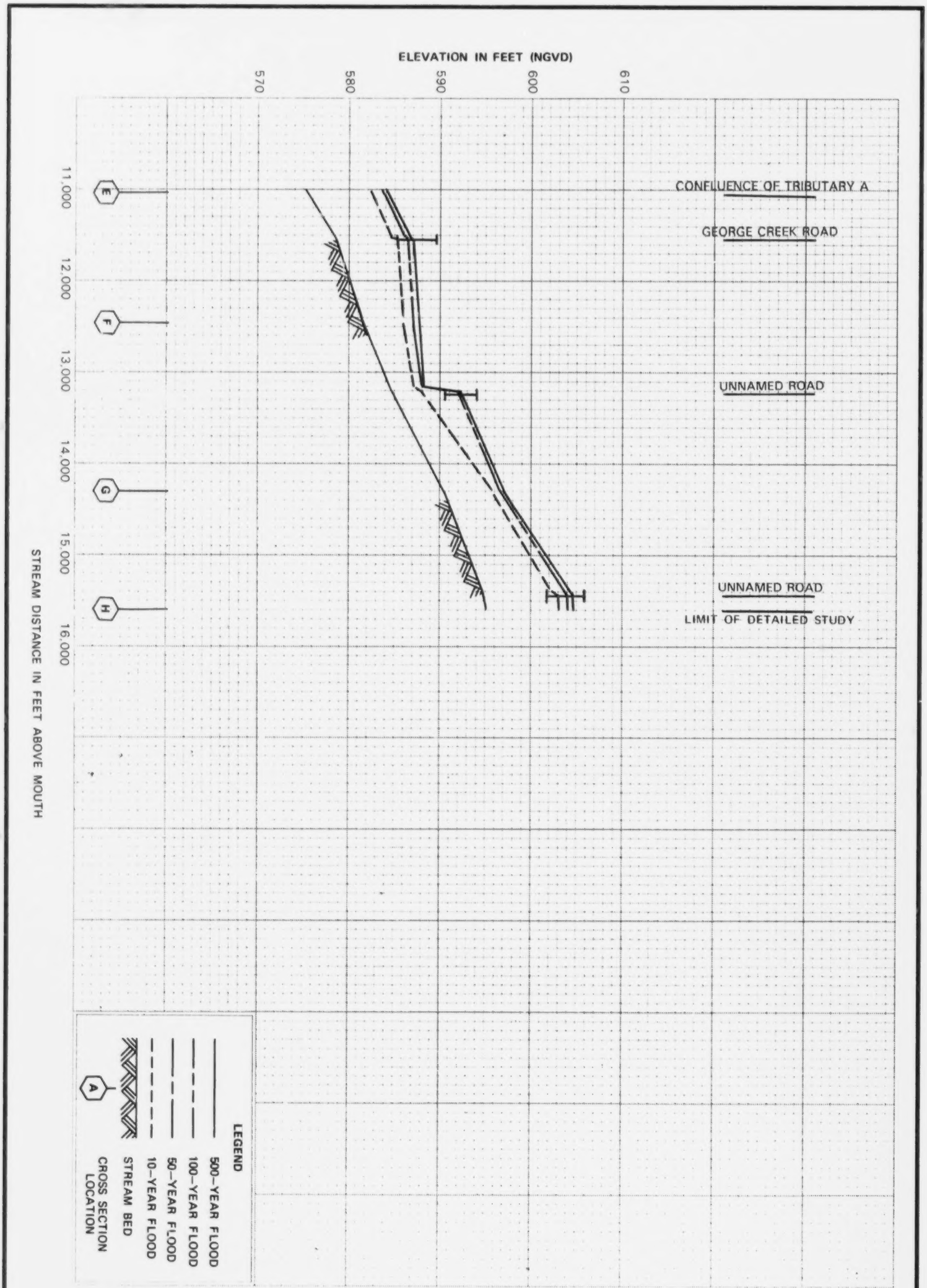


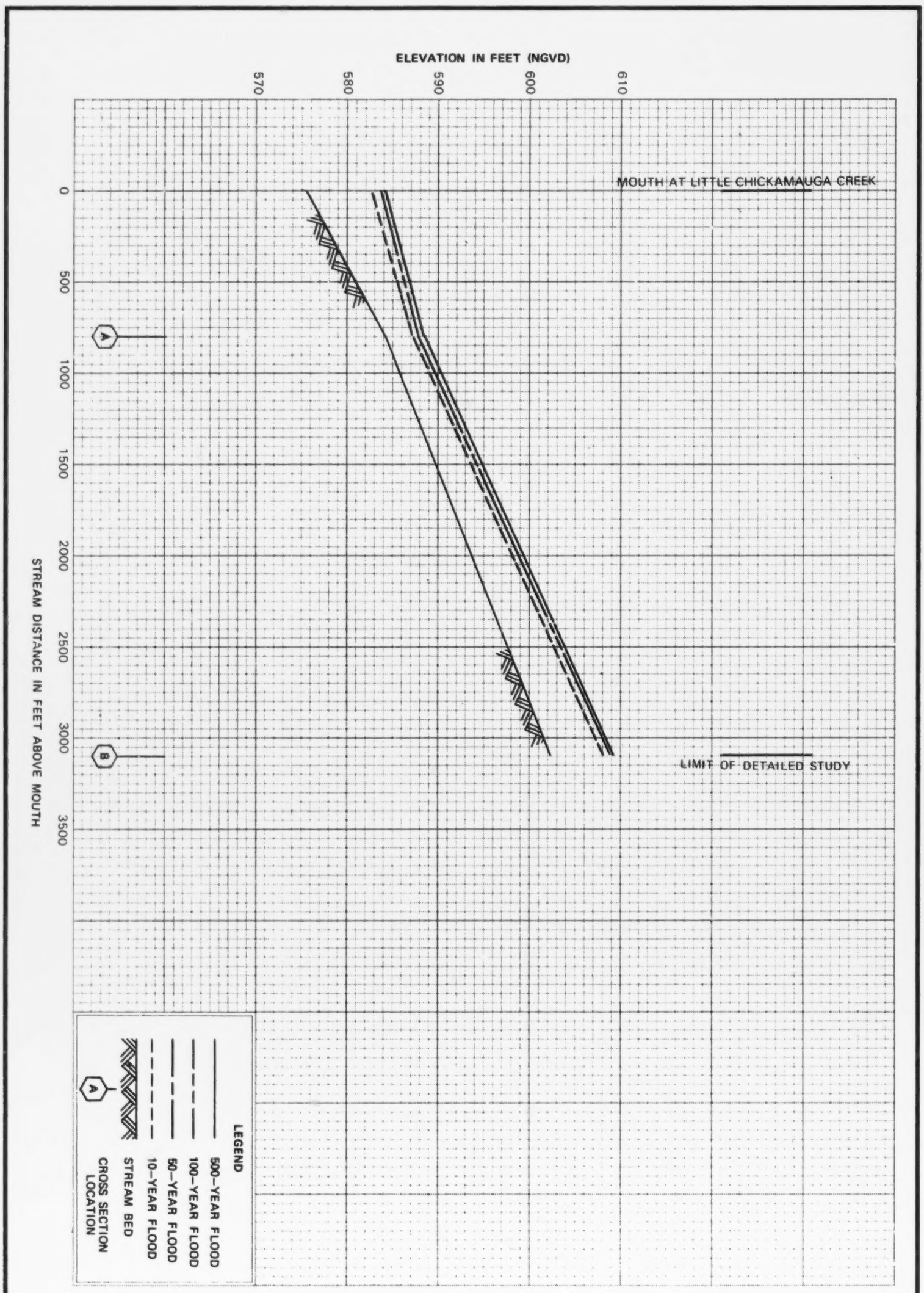
07P

FEDERAL EMERGENCY MANAGEMENT AGENCY

GALLIA COUNTY, OH
(UNINCORPORATED AREAS)

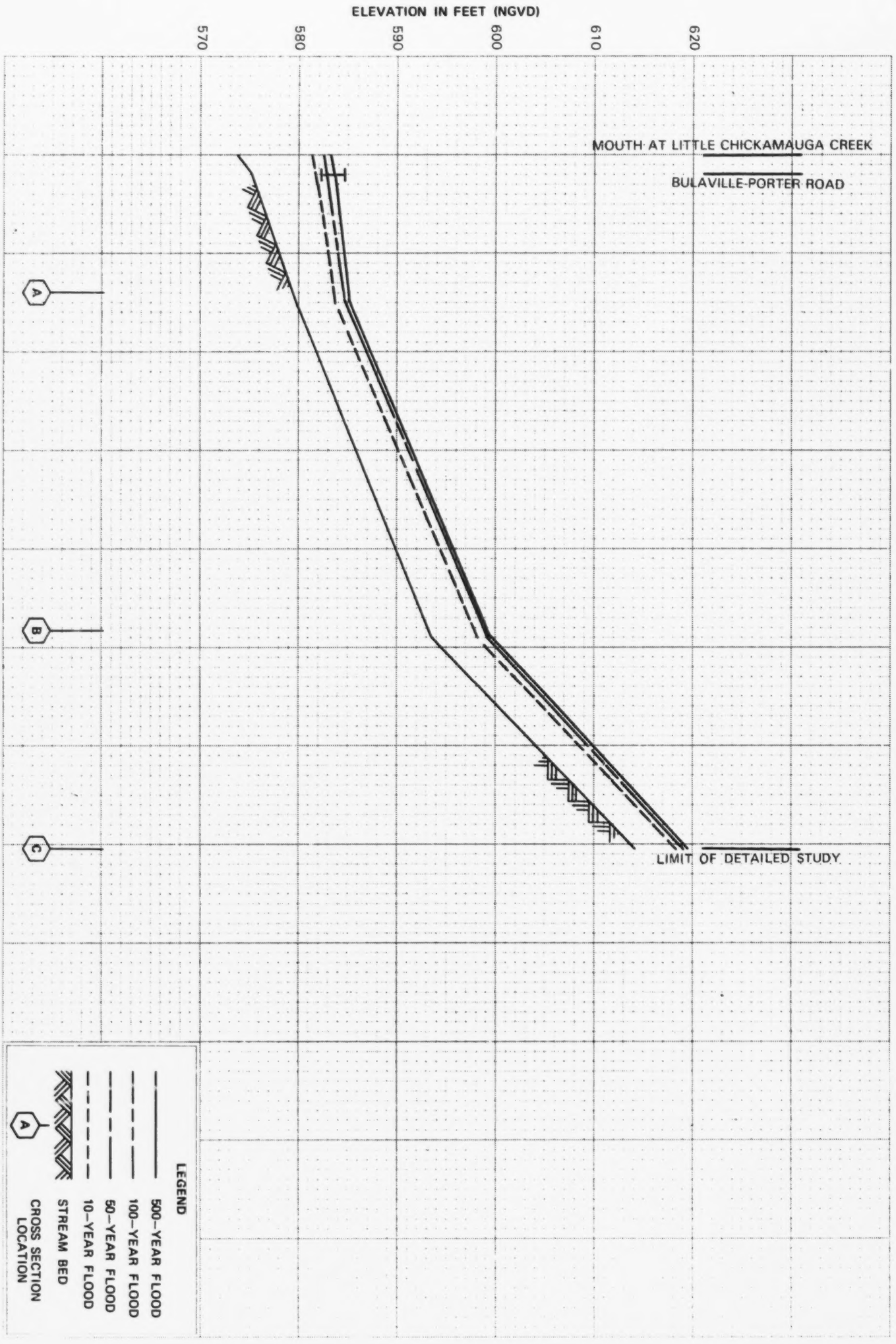
FLOOD PROFILES

LITTLE CHICKAMAUGA CREEK



08P	FEDERAL EMERGENCY MANAGEMENT AGENCY **GALLIA COUNTY, OH** (UNINCORPORATED AREAS)	**FLOOD PROFILES** **TRIBUTARY A**

27



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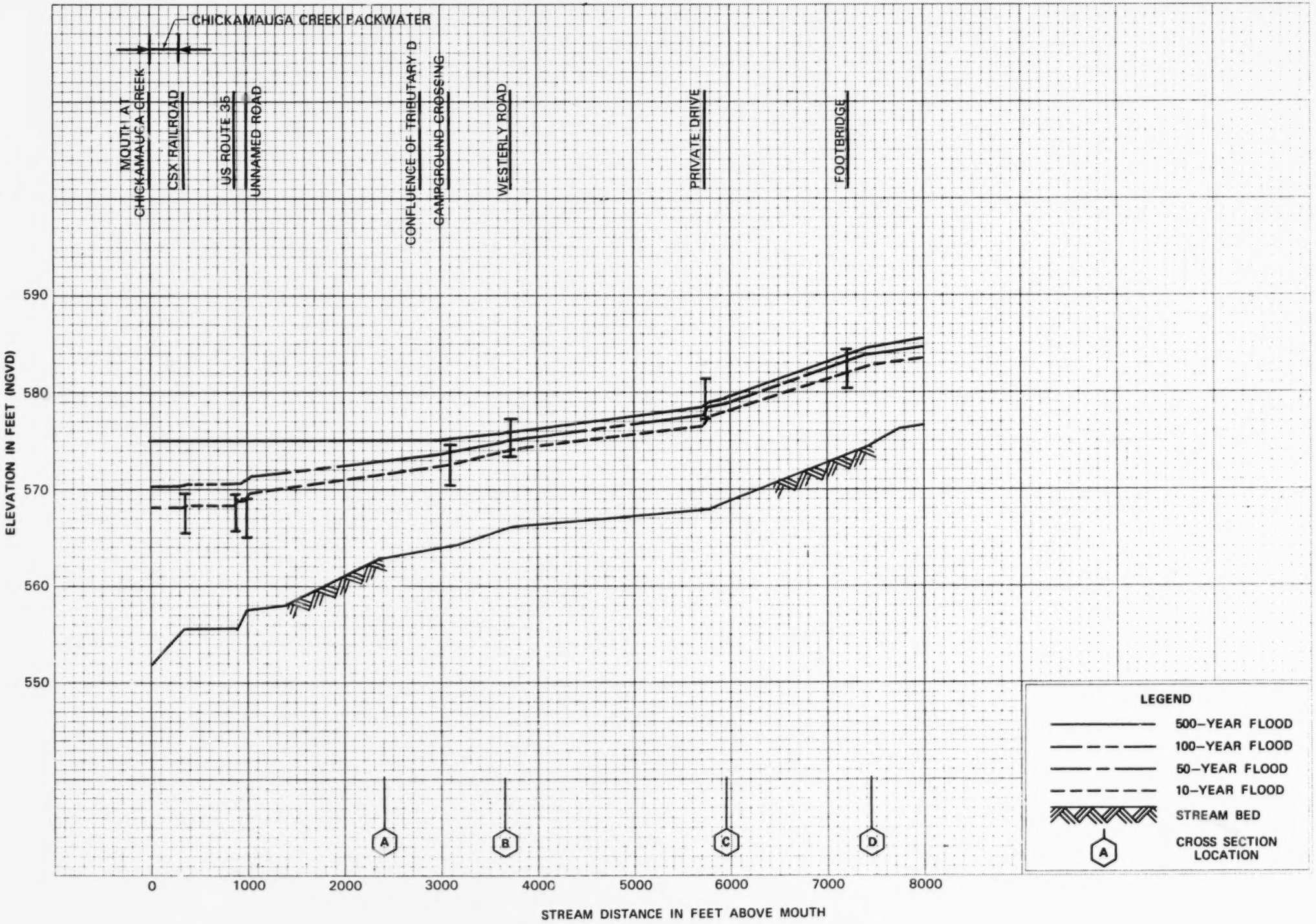


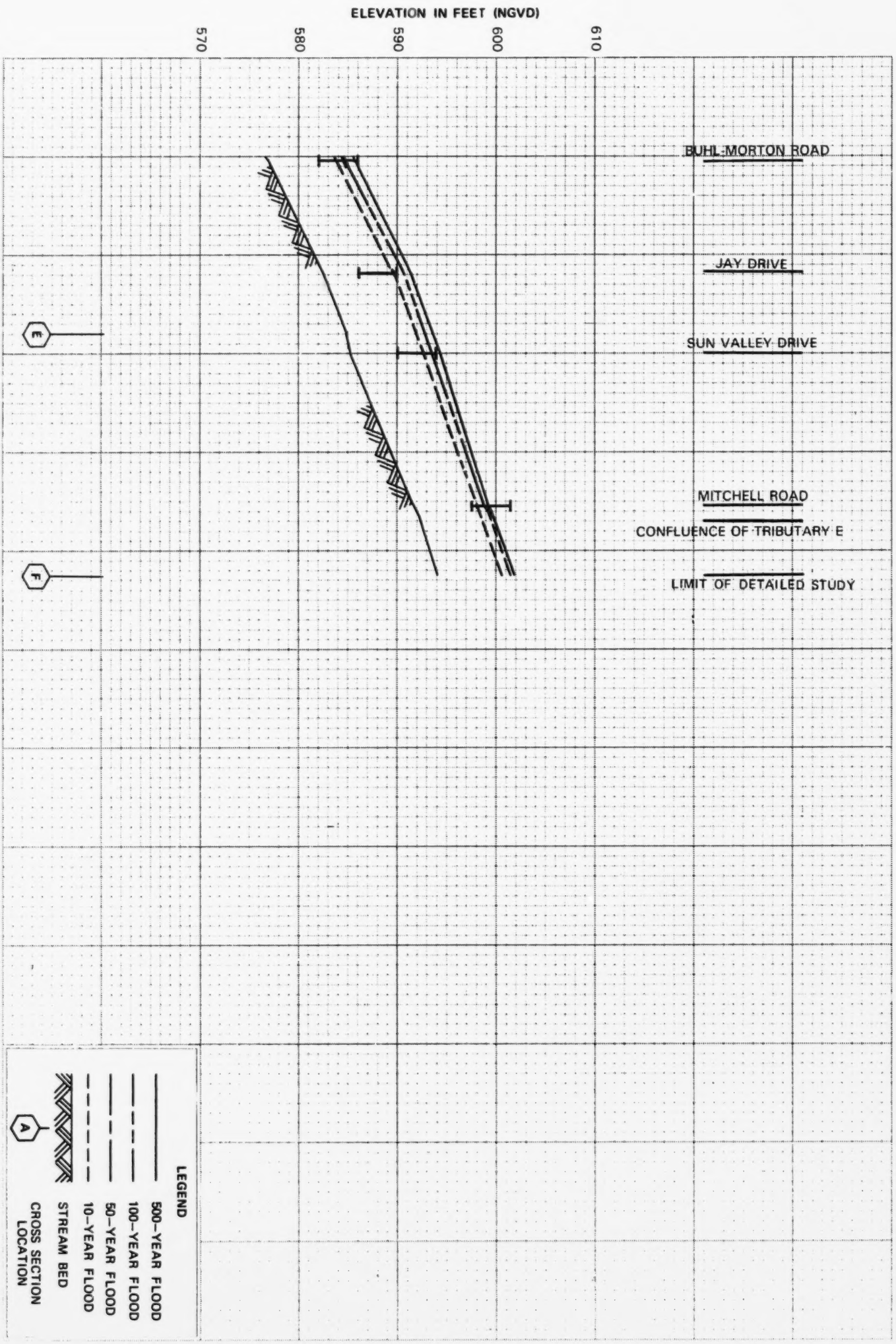
FLOOD PROFILES

TRIBUTARY C

FEDERAL EMERGENCY MANAGEMENT AGENCY

GALLIA COUNTY, OH
(UNINCORPORATED AREAS)

10P



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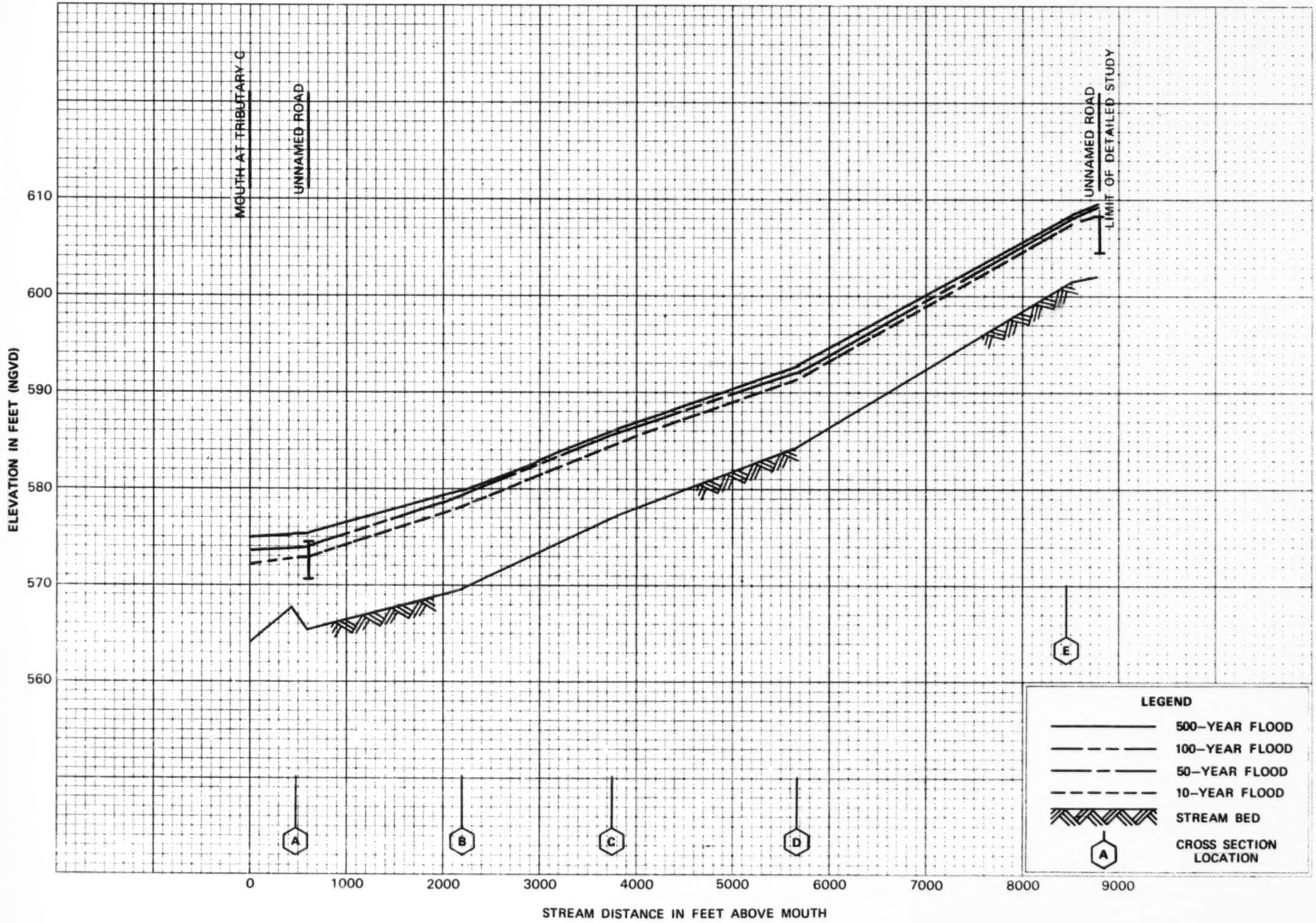


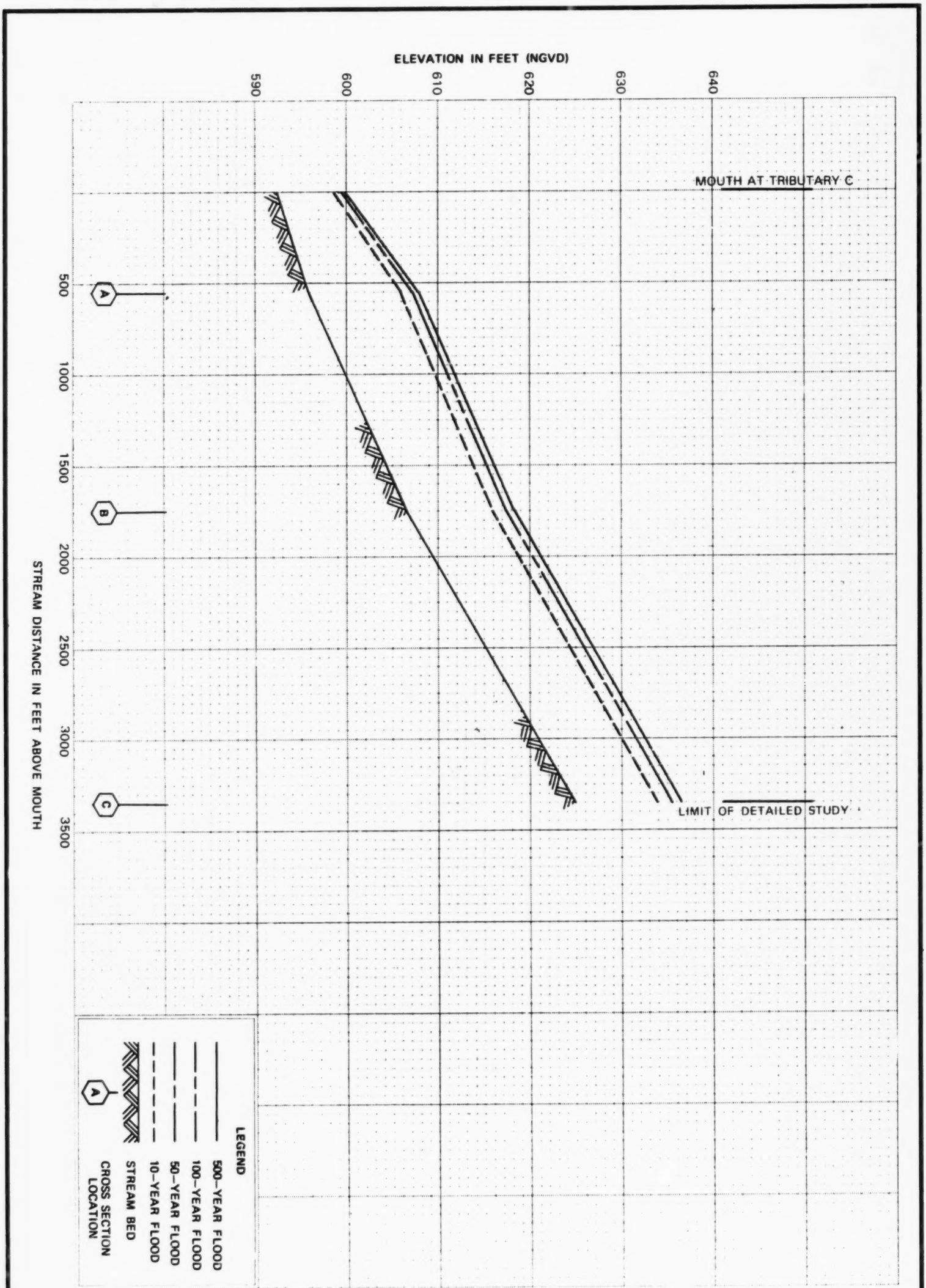
FLOOD PROFILES

TRIBUTARY D

FEDERAL EMERGENCY MANAGEMENT AGENCY

GALLIA COUNTY, OH
(UNINCORPORATED AREAS)

12P



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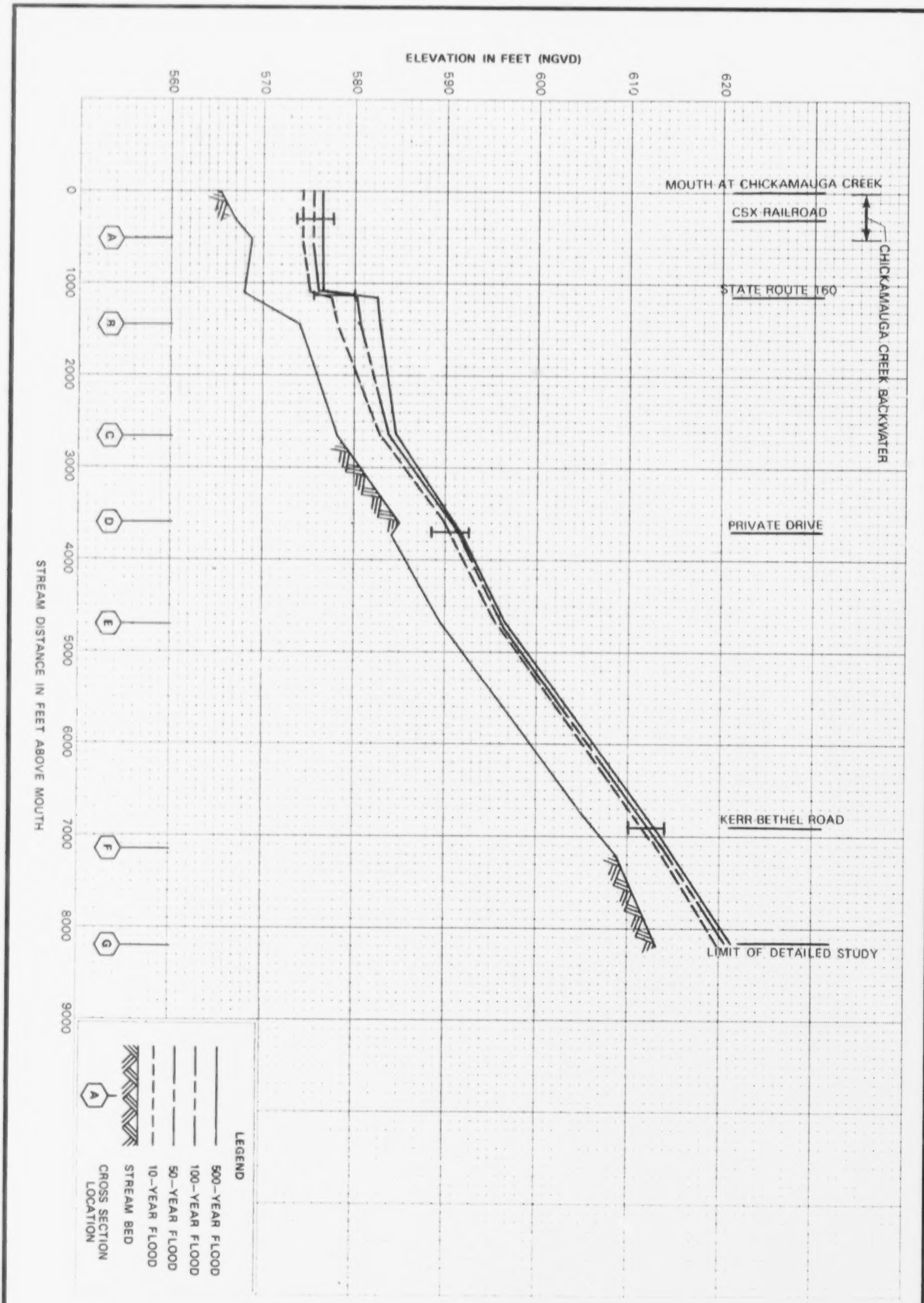

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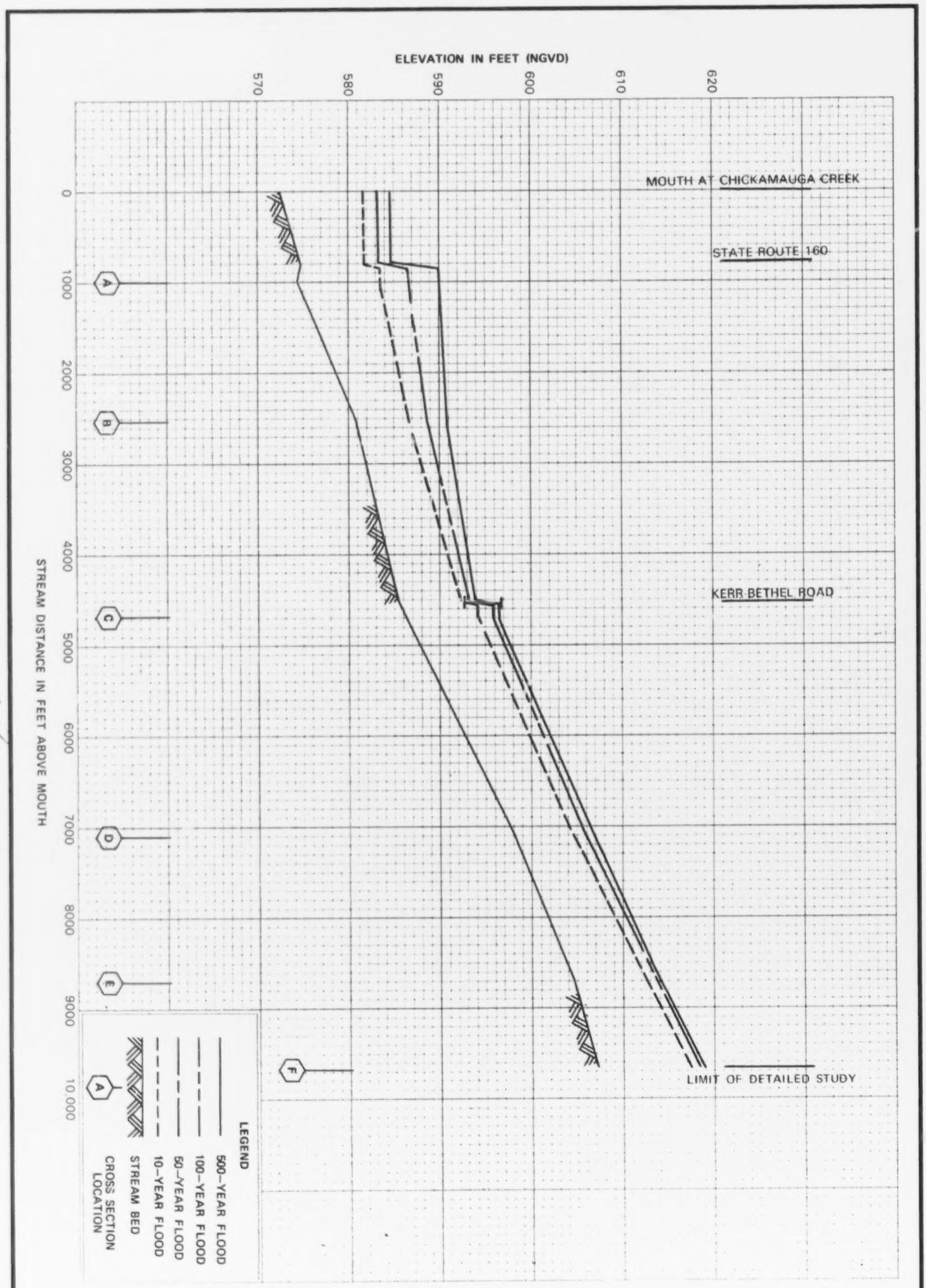

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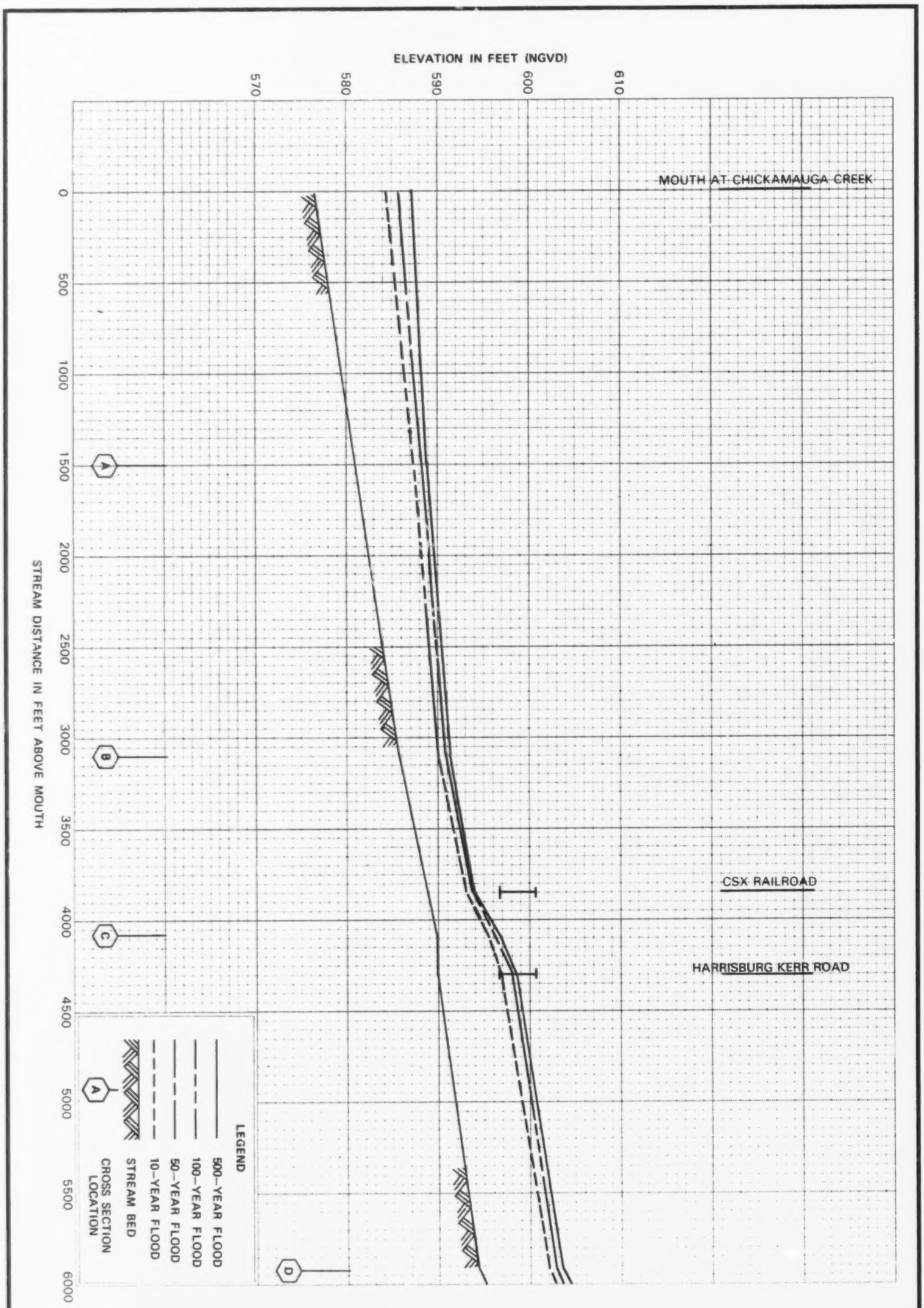

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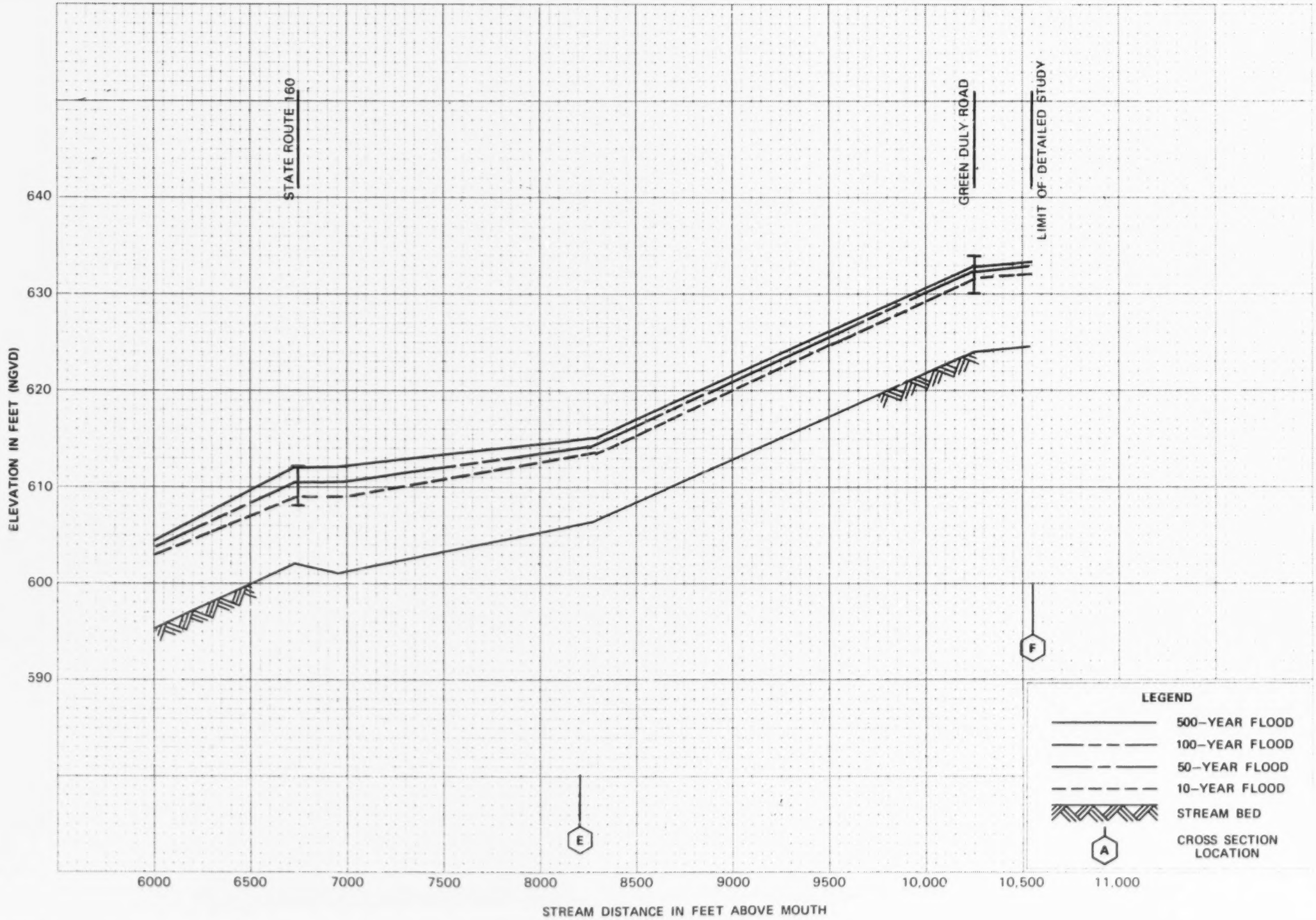


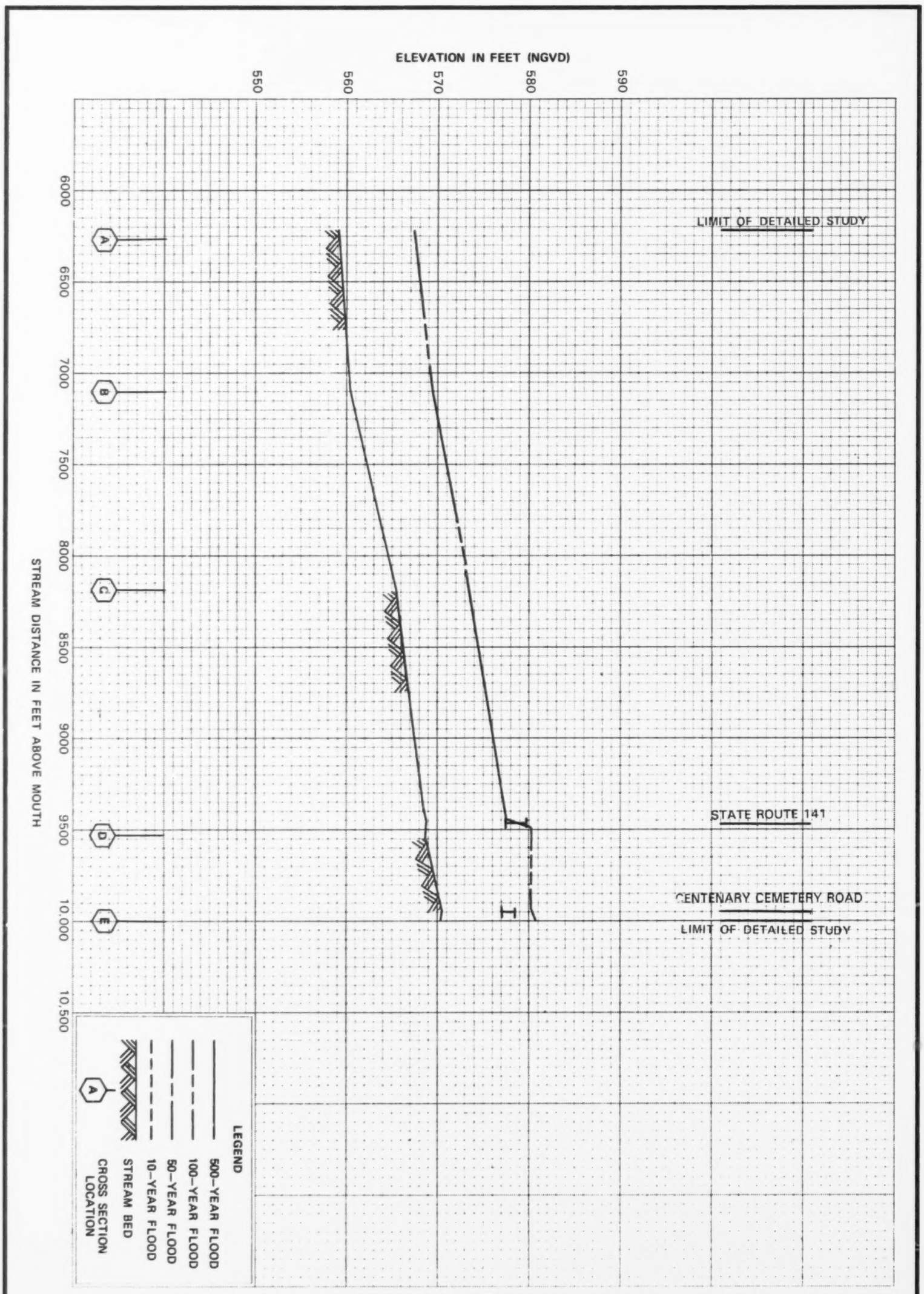
FLOOD PROFILES

TRIBUTARY H

FEDERAL EMERGENCY MANAGEMENT AGENCY

GALLIA COUNTY, OH
(UNINCORPORATED AREAS)

17P



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18P	FEDERAL EMERGENCY MANAGEMENT AGENCY **GALLIA COUNTY, OH** (UNINCORPORATED AREAS)	**FLOOD PROFILES** **CLEAR FORK**